Epidemiology of Shiga Toxin-Producing *Escherichia coli* (STEC) Infections in Connecticut, February 1, 2000 - January 31, 2001

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Background: Infections with Shiga toxin-producing *Escherichia coli* (STEC) are an important public health problem. *E. coli* O157 is the most common STEC in the United States (US). However, standard culture methods for *E. coli* O157 do not detect non-O157 STEC. Studies in other countries suggest that disease caused by non-O157 STEC is as prevalent as O157 STEC. Recognizing that standard cultures do not detected non-O157 STEC, some clinical laboratories in Connecticut have begun using tests to detect Shiga-toxin directly rather than culture for E. coli O157. We took advantage of the change in laboratory methods to characterize the prevalence and epidemiology of non-O157 STEC infection.

Methods: To determine the relative frequency of non-O157 STEC, we conducted statewide laboratory-based surveillance for STEC at each of the 40 clinical microbiology laboratories in CT. As part of reporting requirements, clinical laboratories submit O157 isolates or shiga-toxin positive broths depending on which test they use to the State Laboratory for confirmation and further testing. Laboratory audits were performed to ensure that all cases of STEC were reported. To determine the spectrum of illness and risk factors for O157 and non-O157 STEC infections in Connecticut, we interviewed patients with STEC from February 1, 2000 through January 31, 2001. Differences between case-patients with non-O157 and patients with O157 STEC were assessed.

Results: From February 1, 2000 through January 31, 2001, a total of 90 STEC infections were reported: 61 were detected by laboratories that culture for O157 and 29 were detected by laboratories that test directly for Shiga toxin. Among STEC infections identified by Shiga toxin testing only, 17 (59%) were found on subsequent testing by the state laboratory to be O157 and 12 (41%) were non-O157 STEC, comprising nine different serotypes. Overall, 78 O157 STEC and 12 non-O157 STEC were identified. Compared with patients who had O157 infection, patients with non-O157 were less likely to have diarrhea ($p=0.017$) or bloody stool ($p=0.001$), and were less likely to be hospitalized ($p=0.005$). No differences in demographics, food, or other exposures were identified between patients with non-O157 and O157 STEC infection.

Conclusions: Based on results of Shiga toxin testing in Connecticut, non-O157 STEC was detected nearly as often as O157 STEC. Severity of illness caused by non-O157 STEC infection appears to be milder. Differences in risk factors between non-O157 STEC and O157 were not identified. Clinicians evaluating patients with diarrhea should consider infection with non-O157 STEC. Ongoing surveillance for both O157 and non-O157 STEC is needed to better define the incidence and epidemiology of STEC infections in Connecticut.

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